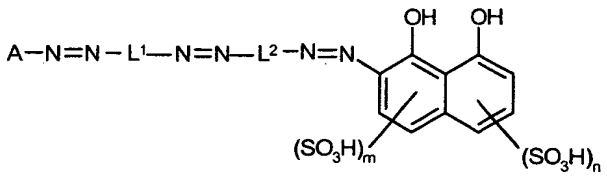
Claims

1. A process for printing an image on a substrate comprising applying thereto a composition comprising a liquid medium and a tris-azo compound of Formula (1) or salt thereof:



Formula (1)

wherein:

A is an optionally substituted alkenyl, homocyclic or heterocyclic group;

L^1 and L^2 are each independently optionally substituted aryl or heteroaryl; and

m and n are each independently 0 or 1 such that m+n is 1 or 2;

wherein:

(i) the compound of Formula (1) is optionally in the form of a metal chelate; and

(ii) at least one of L^1 and L^2 carries at least one substituent selected from sulpho, carboxy, C_{1-4}-alkoxy and C_{1-4}-alkoxy-OH.

2. A process according to claim 1 wherein the composition is applied to the substrate by means of an ink jet printer.

3. A process according to any one of the preceding claims wherein the image is text, a picture, a photorealistic image or a combination thereof.

4. A process according to any one of the preceding claims wherein the substrate is paper, plastic, metal or glass.

5. A process according to any one of the preceding claims wherein:

A is optionally substituted pyridyl, furyl, thienyl, thiazolyl, isothiazolyl, imidazolyl, benzimidazolyl, pyrazinyl, pyrimidyl, quinolyl, isoquinolyl, benzofuryl, benzothienyl, pyrazolyl, indolyl, purinyl, isoxazolyl, oxazolyl, thiadiazolyl, furazanyl, pyridonyl, pyrazolonyl, piperidinyl, piperazinyl, pyrrolidinyl, morpholinyl, tetrahydrofuranyl, tetrahydrothiophenyl or tetrahydropyranyl;

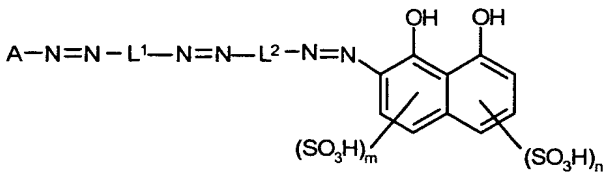
L^1 phenyl or naphthyl optionally carrying a substituent selected from sulpho and carboxy;

L^2 is phenyl or naphthyl carrying at least one substituent selected from sulpho, carboxy C_{1-4}-alkoxy and C_{1-4}-alkoxy-OH; and

m and n are each independently 0 or 1 such that m+n is 1 or 2;

wherein said optional substituents are selected from OH; SO_3H; CN; carbonamido; PO_3H_2; CO_2H; NO_2; NH_2; C_{1-4}-alkyl optionally carrying a sulpho, carboxy, phosphato, C_{1-4}-alkoxy, amino or hydroxy group; C_{1-4}-alkoxy optionally carrying a sulpho, carboxy, phosphato, C_{1-4}-alkoxy, C_{1-4}-alkyl, amino or hydroxy group; phenyl or phenyl carrying from 1 to 3 substituents selected from sulpho, carboxy, phosphato, C_{1-4}-alkoxy, amino, hydroxy and N carrying one or two C_{1-4}-alkyl groups optionally carrying a sulpho, carboxy, phosphato, C_{1-4}-alkoxy, amino or hydroxy group; N carrying one or two C_{1-4}-alkyl groups optionally carrying a sulpho, carboxy, phosphato, C_{1-4}-alkoxy, amino or hydroxy group; and C_{1-4}-acylamino.

6. A tris-azo compound of Formula (1) or salt thereof:



Formula (1)

wherein:

A is an optionally substituted alkenyl, homocyclic or heterocyclic group;

L^1 and L^2 are each independently optionally substituted aryl or heteroaryl;

m and n are each independently 0 or 1 such that m+n is 1 or 2; and

with the provisos that:

(i) the compound of Formula (1) is optionally in the form of a metal chelate;

(ii) L^1 and L^2 are each independently optionally substituted phenylene or naphthylene;

(iii) optional substituents present on L^1 and L^2 are selected from OH, SO_3H, CN, carbonamido, PO_3H_2, CO_2H, NO_2, NH_2, optionally substituted alkyl, optionally substituted alkoxy, optionally substituted aryl, optionally substituted amine and optionally substituted acylamine;

(iv) at least one of L^1 and L^2 carries at least one substituent selected from sulpho, carboxy, C_{1-4}-alkoxy and C_{1-4}-alkoxy-OH; and

(v) when L^1 carries a methoxy group A is not 1,3-diaminophenyl.

7. A compound according to claim 6 wherein A is optionally substituted pyridyl, furyl, thienyl, thiazolyl, isothiazolyl, imidazolyl, benzimidazolyl, pyrazinyl, pyrimidyl, quinolyl, isoquinolyl, benzofuryl, benzothienyl, pyrazolyl, indolyl, purinyl, isoxazolyl, oxazolyl, thiadiazolyl, furazanyl, pyridonyl, pyrazolonyl, piperidinyl, piperazinyl, pyrrolidinyl, morpholinyl, tetrahydrofuranyl, tetrahydrothiophenyl or tetrahydropyranyl.

8. A compound according to claim 6 wherein A is optionally substituted pyridonyl.

9. A compound according to any one of claims 6 to 8 wherein L^1 is phenyl or naphthyl optionally carrying a substituent selected from sulpho and carboxy.

10. A compound according to any one of claims 6 to 9 wherein L^2 is phenyl or naphthyl carrying at least one substituent selected from sulpho, carboxy, C_{1-4}-alkoxy and C_{1-4}-alkoxy-OH.

11. A compound according to any one of claims 6 to 10 wherein L^2 is phenyl carrying two C_{1-4}-alkoxy-OH substituents.

12. A compound according to claim 6 wherein:

A is optionally substituted pyridyl, furyl, thienyl, thiazolyl, isothiazolyl, imidazolyl, benzimidazolyl, pyrazinyl, pyrimidyl, quinolyl, isoquinolyl, benzofuryl, benzothienyl, pyrazolyl, indolyl, purinyl, isoxazolyl, oxazolyl, thiadiazolyl, furazanyl, pyridonyl, pyrazolonyl, piperidinyl, piperazinyl, pyrrolidinyl, morpholinyl, tetrahydrofuranyl, tetrahydrothiophenyl or tetrahydropyranyl;

L^1 phenyl or naphthyl optionally carrying a substituent selected from sulpho and carboxy;

L^2 is phenyl or naphthyl carrying at least one substituent selected from sulpho, carboxy C_{1-4}-alkoxy and C_{1-4}-alkoxy-OH; and

m and n are each independently 0 or 1 such that m+n is 1 or 2;

wherein said optional substituents are selected from OH; SO_3H; CN; carbonamido; PO_3H_2; CO_2H; NO_2; NH_2; C_{1-4}-alkyl optionally carrying a sulpho, carboxy, phosphato, C_{1-4}-alkoxy, amino or hydroxy group; C_{1-4}-alkoxy optionally carrying a sulpho, carboxy, phosphato, C_{1-4}-alkoxy, C_{1-4}-alkyl, amino or hydroxy group; phenyl or phenyl carrying from 1 to 3 substituents selected from sulpho, carboxy, phosphato, C_{1-4}-alkoxy, amino, hydroxy and N carrying one or two C_{1-4}-alkyl groups optionally carrying a sulpho, carboxy, phosphato, C_{1-4}-alkoxy, amino or hydroxy group; N carrying one or two C_{1-4}-alkyl groups

optionally carrying a sulpho, carboxy, phosphato, C_{1-4}-alkoxy, amino or hydroxy group; and C_{1-4}-acylamino.

13. A tris-azo compound of Formula (1), as shown in claim 6, or a salt thereof, optionally in the form of a metal chelate, wherein:

A is pyridonyl carrying at least one substituent selected from carbonamido and C_{1-4} alkyl;

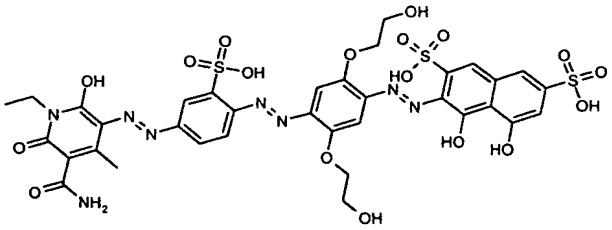
L^1 is phenyl carrying at least one sulpho substituent;

L^2 is phenyl carrying at least one substituent selected from sulpho, carboxy C_{1-4}-alkoxy and C_{1-4}-alkoxy-OH; and

m and n are both 1.

14. A compound as defined in any one of the Examples described herein.

15. A composition comprising a compound of Formula (1) or salt thereof as defined in claim 1 and a low melting point solid or a liquid medium comprising water and an organic solvent, wherein the compound of Formula (1) is not Formula (3) or a salt thereof:



Formula (3).

16. A composition according to claim 15 wherein the compound of Formula (1) is as defined in any one of claims 6 to 14.

17. A composition according to claim 15 or 16 which has a concentration of less than 500 parts per million of halide ions, wherein parts refer to parts by weight relative to the total weight of the composition.

18. A composition according to any one of claims 15 to 17 which has less than 50 parts per million of divalent and trivalent metals, wherein parts refer to parts by weight relative to the total weight of the composition.

19. A paper, an overhead projector slide or a textile material printed with a composition according to claim 15, 16, 17 or 18 or a compound according to any one of claims 6 to 14 or

by means of a process according to any one of claims 1 to 5.

20. An ink jet printer cartridge, optionally refillable, comprising one or more chambers and a composition, wherein the composition is present in at least one of the chambers and the composition is as defined in any one of claims 15 to 18.

21. Use of a compound of Formula (1), as defined in claim 1, in ink jet printing.